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BEST METHODS OF FEEDING



**FOWLS, CHICKS
TURKEYS, DUCKS
AND GEESE.**

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By H. A. Nourse ✓

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BEST METHODS OF FEEDING

Little Chicks, Growing Chicks, Fowls,
Turkeys, Ducks and Geese, For Eggs,
For Market and For Exhibition, With
Formulas For Mixing Rations

By H. A. NOURSE
AND OTHER COMPETENT AUTHORITIES

COMPLETELY ILLUSTRATED
WITH HALF-TONES FROM PHOTOGRAPHS



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The Profit Makers



Colony houses collected and lined up for the winter. In spring these are scattered over the farm.

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General Theory and Practice of Feeding

The Feeding of Poultry as a Practical Science is of Comparatively Recent Origin,
But Its Development Has Been Followed by Rapid
Improvement in Results

UNTIL comparatively recent years, most poultry keepers paid no attention to whether the food they were giving their poultry was suitable or not. If they thought at all, they probably supposed that the chick was endowed by nature with the power to create bone, muscle and feathers from anything that it would or could eat and that the hen was so constituted that no matter what she filled her crop with, she could construct eggs out of it, if she would. In the olden days, before the time of exclusive poultry farms, well organized and equipped poultry departments on farms and modern village lot poultry plants, most of the poultry and eggs were produced, incidentally, on farms. The poultry was not "kept" but was compelled to keep itself. The hatching was done in the late spring and early summer, the chicks were fed for a while when young, then allowed to shift for themselves, roosting in the trees until cold weather arrived and then seeking shelter in sheds and barns. Occasionally a poultry house was provided, but usually it was neither comfortable nor healthful. There was no theory, no plan to the feeding. Whatever was handiest and in greatest supply was fed and usually that consisted of one kind of grain.

Under such conditions, no eggs were produced in winter, but such of the hens as survived the winter literally "shelled them out" during the spring and summer. This was because when spring brought fresh vegetation, and bugs and worms appeared, the hens were able to secure enough of the different food elements from nature's stores to make, with the grains they were given by the owner, a reasonably well balanced ration, which, with the freedom from encraving cold, enabled them to produce eggs in goodly numbers.

In later days, progressive poultry keepers, experiment stations and others, have figured out ways by which to supply the hen during the winter with the same food elements that she obtains when on the range in summer and that, with the better, more comfortable and more healthful quarters, makes it possible to secure eggs during the cold season, which means to secure them when the price is highest and the profit largest. The little chick that came out in nature's hatching season found everything favorable for his nourishment, including the tender shoots of grass, the bugs and worms (which sometimes the hen caught and tore into small bits) the little seeds, etc., all of which made a reasonably well balanced ration. When poultry growers turned their attention to producing chicks earlier than nature's season, because that was the way to increase the profits, they had to furnish not only warm quarters but the green food, meat food, etc., that nature furnished. They found that without these items, which formerly were not considered important, the death rate was heavy and growth and development was small.

The successful practice of feeding, therefore, is very nearly a matter of feeding the kinds of food that nature intended chicks and fowls to have. If these elements are furnished there is seldom any trouble in getting good growth and a heavy egg production, if other conditions are reasonably good. To be sure, the scientific feeders have figured out just how to combine these different food elements, just how much wheat, how much corn, how much beef scraps, etc., are necessary to make an exactly balanced ration, but the primary rule is to reproduce, as far as possible, the elements found in the foods that nature provided when chicks and fowls roamed freely over upland and lowlands in warm weather.



Brooder house and its flocks of early hatched chicks.

Feeding Little Chicks

Easily Digested Food Must Be Given at the Start—Formulas for Making Satisfactory Mash and Grain Mixtures—The Use of Charcoal, Grit and Green Food

WHEN you consider how delicate is the organism of a baby chick, one wonders how so many of them live that are fed rations entirely unsuited to their requirements. When careless feeding methods are used the losses are usually smallest in flocks of little chicks which are hatched after the beginning of warm weather when a greater opportunity for exercise enables them to digest and assimilate foods that can not be digested and made use of when cold weather confines them to coops or houses. In the warmer months, too, they have an opportunity to get some very nourishing food by foraging if they have an outdoor run and especially if the hen is also free so that she can dig up bugs and worms, etc. In any event, the losses are so heavy when little chicks are improperly fed that all chance of profit is usually spoiled.

It is plain that little chicks must have food that is easily digested, and that, when digested, yields the different food properties which make flesh, bone and feathers. This means that not only must the food be easy to digest but that it must include a variety of different grains as well as some form of meat food and some green food. Fine grit is also needed to assist in grinding the food in the gizzard of the chick and finely granulated charcoal is an excellent thing to absorb poisonous gases and juices in the digestive organs, which poisonous gases and juices, if allowed to remain (assuming they are present) not only spoil digestion but poison the chick. A good first feed for little chicks is made up as follows:

Wheat bran	one part
Corn meal	two parts
Sifted beef scraps	five per cent (by bulk)

The beef scrap is to furnish animal protein but its place may be taken by infertile eggs which are tested out from under hens or from incubators, about the same proportion being used. These ingredients are mixed in a mash with water, milk or sour milk and baked hard. If sour milk is used, a little soda should be added.

This cake is crumbled and fed dry, as much as the little chicks will eat up, promptly, five times a day. In addition, there should be a little dish of fine grit and another of fine charcoal always available and fresh, clean water should be always within reach but should be so supplied that the chicks cannot get into it and get wet. Milk, whole or skim, sweet or clabbered, is excellent but will not take the place of water, which must be supplied also.

After the first few days, any of the well-known mixtures of finely cracked grains which are sold for feeding little chicks may gradually be substituted for this cake so that at the end of ten days or two weeks they will be eating the dry grain mixture alone.

A dry mash, made up the same way as the mixture for the cake (except, of course, beef scraps must be used instead of egg) may be kept before the chicks in hoppers. When this is done, the feeding of the dry grains may be reduced to three times per day after two weeks.

It is impossible to secure satisfactory growth without the use of green food because without that important element the juices of the digestive organs are not capable of digesting the food properly and turning it into growth for the body of the chick. Moreover, it furnishes bulk and helps to exercise the digestive organs by extending them and serves as an

appetizer. When the chicks are very young, finely chopped, fresh lettuce or tender cabbage, chopped apple or grated mangle beets or anything that is fresh, tender and succulent is satisfactory. As they grow older coarser forms of green food may be fed.

The Minnesota Method.

The Poultry Division of Minnesota Agricultural College recommends the following dry mash for little chicks after they are 48 hours old:

Wheat bran	two parts
Shorts	two parts
Corn meal	two parts
Ground oats (sifted)	one part
Meat scraps (sifted)	one part

If buttermilk or sour skimmilk is available, it may be kept before them at all times, at least until they are six weeks old. A good commercial dry grain chick feed or the following homemade mixture is recommended for chicks from two days to two weeks old:

Finely cracked corn	one part
Cracked wheat	one part

This is to be fed daily, four times each day, and the dry mash is to be kept before the chicks at all times. After they are two weeks old, coarser grain rations may be fed and the number of feedings reduced to three times a day.

The Division recommends the following first feeds for baby chicks:

Steel-cut oatmeal
Finely cracked wheat or corn
Commercial chick starter
Yolks of hard boiled eggs
Cracker crumbs or stale dry bread
Crumbs, soaked in sweet milk

The Purdue Method.

The Poultry Department of Purdue University, Indiana, recommends the following dry mash:

Wheat bran	2 pounds
Shorts	2 pounds
Charcoal	$\frac{1}{4}$ pound

For "scratch feed" is recommended:

Finely cracked corn	6 pounds
Finely cracked wheat	4 pounds
Steel-cut oats	2 pounds

All the milk or buttermilk the chicks will drink and all the green food they will eat. If milk is not available, $2\frac{1}{4}$ pounds of fine meat scraps (commercial) should be added to the foregoing mash. Grit (or sharp sand) and granulated bone should be before the chicks at all times in hoppers.

The Connecticut Method.

Connecticut Agricultural Experiment Station, recommends the following for a dry mash:

Wheat bran	30 pounds
Cornmeal	10 pounds
Ground oats	10 pounds
Standard or flour middlings	10 pounds
Beef or fish scrap	10 pounds

It recommends for scratch feed, the following:

Cracked wheat	15 pounds
Finely cracked corn	15 pounds
Pinhead oats	15 pounds

Milk as well as water, should be before the chicks at all times. Sweet milk gives as good results as sour but as sweet milk sours rapidly in warm weather, it is best to use sour milk entirely rather than some sweet milk and some sour milk. It should be in a thickened condition.

The Wisconsin Method.

The poultry experts at Wisconsin Agricultural College recommend the following corn bread for chicks the first ten days:

Finely ground corn	1 pint
Wheat bran	1 teacupful
Soda	1 teaspoonful
Sour milk	1 teacupful

Bake one hour and feed four times a day. Mix a little dry grain chick feed into the litter to induce exercise.

After the first few days the following mash is recommended, either fed dry or mixed crumbly with water or sour milk:

Corn meal	150 pounds
Wheat bran	100 pounds
Wheat middlings	100 pounds
Rolled oats	25 pounds
Meat scrap	20 pounds
Oil meal	5 pounds
Salt	3 pounds



A free range flock of breeders that will lay strongly fertile eggs.

For scratch feed the following is recommended:

Finely cracked corn	100 pounds
Finely cracked wheat	100 pounds

Green food must be furnished. The dead-germ eggs (fertile eggs not strong enough to hatch) that are tested out from the incubator should be boiled hard, run through a food chopper and mixed with the mash.

The Cornell Method.

The Poultry Department at Cornell University, Ithica, N. Y., recommends the following mash for chicks from three days to two weeks old:

Wheat bran	2 pounds
Wheat middlings (flour middlings preferred)	1 pound
Cornmeal or hominy	1 pound
Ground oats (sifted)	1 pound
Meat scraps (sifted, best grade)	1 pound

This should be moistened with sour skimmilk or buttermilk and fed twice a day between grain feedings. Chopped green food should be combined with it. For a grain mixture, the following is recommended:

Finely cracked corn	5 pounds
Cracked wheat	3 pounds
Pinhead oats, steel-cut oats or oat flakes	2 pounds

This mixture should be fed in litter three times a day, morning, noon and night.

The Colorado Method.

Colorado Agricultural College recommends the following mash:

Wheat bran	4 parts
Fine corn chop	2 parts
Ground oats (sifted)	2 parts
Middlings	2 parts

Ground oats and middlings, if hard to obtain, may be left out but one or both should be used if possible. This mixture, thoroughly moistened with milk or water, should be fed once a day. The same mixture made into a johnny cake and baked in the

oven, offers variety and should be fed in pieces, allowing the chicks to pick at it at will. The following is recommended for a scratch ration:

Cracked corn	4 pounds
Cracked wheat	4 pounds
Oatmeal	1 pound

This should be thoroughly mixed and fed in litter so that the chicks will have to dig it out. Green food should be furnished fresh and crisp, daily, if the chicks are penned up.

U. S. Government Method.

The Poultry Division of the Department of Animal Husbandry of the U. S. Department of Agriculture recommends a johnny cake made as follows:

Cornmeal	10 pounds
Eggs (infertile)	1 dozen
Baking soda	1 heaping tablespoonful

This is to be mixed with milk, baked well and fed in the middle of every forenoon and every afternoon. For a scratch mixture, to be fed with the foregoing, the following is recommended.

Cracked corn	5 pounds
Cracked wheat	2 pounds
Pinhead oatmeal or hulled oats	2 pounds
Broken rice, cracked peas, millet, rape, or a mixture of these	1 pound

This is to be fed morning, noon and night, scattered in chaff litter. When the chicks are from 10 days to 2 weeks old, the following mash can take the place of the johnny cake. All measures are by weight.

Wheat bran	2 parts
Middlings or oatmeal	2 parts
Corn meal	1 part
Meat scrap (sifted)	1/2 part

This mash may be fed dry in hoppers before the chicks at all times, or once each day as a moist, crumbly mash and the grain mixture just described fed three times a day.



A flock of White Leghorn pullets just rounding into maturity.



A substantial, comfortable, town-lot poultry house and yards.

Feeding The Growing Chicks

How to Provide Nourishment which will Assure a Steady, Vigorous Growth and Uniform Development—Several Rations that have Proved Successful—Buttermilk is a Valuable Feed

WHEN chicks arrive at what is known as the broiler age, about ten weeks old, if they have been well fed and cared for, the time of heavy losses is past and the time of the most interesting growth has arrived. If they are on free range, almost any method of feeding will produce good results, though no matter how favorable are conditions, better feeding produces better results and better results are more profitable. When the chicks are confined in yards, even large yards, very careful feeding must be practiced or the chicks will never grow as they should, or never develop into strong, healthy specimens and will never be profitable. It is, therefore, plain that no matter what the conditions and environment are, the best methods of feeding must be practiced if the best results are expected.

A supply of clean, fresh water is just as necessary as when the chicks were younger and the grit and charcoal (which must be larger than for little chicks) must be always before them. Milk can be given as a drink with excellent results and may be fed whole or skim, sweet or sour. Buttermilk is also good. Milk will not take the place of water, which must also be supplied. When feeding milk, the dishes must be cleaned every day and scalded as often as is necessary to keep them from becoming foul and poisonous through the decaying of milk which becomes attached to their sides.

Almost anything in the way of green food that the chicks will eat will serve the purpose. The only requirement is that it be fresh, tender and succulent to a degree that the chicks will consume a reasonable amount of it. Fresh, tender lawn clippings, young clover, cut in short lengths, mangle beets or other vegetables serve excellently.

The main thing in feeding is to provide a variety so that the chicks can be sure of a good chance to get each of the elements required to properly nourish its

body. When the chicks are on range, excellent results have been obtained by feeding simply cracked corn and beef scraps in hoppers. In such cases, the chicks are depended on to get their green food and other material needed to balance the ration by foraging. It is better, however, to place cracked corn, wheat and oats in one hopper and a mixture of equal parts, bran, corn meal and beef scraps in another and allow the chicks to select what they want—for their wants usually indicate their needs. This will not do, however, when chicks are confined in yards because they do not get sufficient exercise and do not get far enough away from the feed hoppers to guard against eating too much and becoming "stale," as the saying is, which means that food has become distasteful to them. Therefore, those that are confined must have their hard grain scattered in some kind of a litter so that they will obtain exercise scratching it out and their dry mash given at intervals, or the same ingredients mixed crumbly with water and fed once or twice a day.

The Minnesota Ration.

The Poultry Division of Minnesota Agricultural College recommends the following mash mixture:

Wheat bran	100 pounds
Wheat middlings	100 pounds
Corn meal	100 pounds
Ground oats (fine) or oat meal	100 pounds
Beef scraps	60 pounds
Salt	3 pounds

If skimmilk or buttermilk is fed in an unlimited quantity, the beef scrap may be omitted. Any well balanced grain mixture may be fed in connection with this mash and both may be given dry in hoppers if the flock has free farm range.

The Cornell Ration.

The Poultry Division at Cornell University rec-



A suburban poultry house and flock of White Plymouth Rocks.

ommends the following mash mixture. It always should be before the chicks in hoppers:

Wheat bran	100 pounds
Wheat middlings	100 pounds
Corn meal	100 pounds
Ground oats	100 pounds
Meat scraps	100 pounds
Salt	3 pounds

For a change, this mixture may be moistened with milk or water. The following grain mixture is recommended for feeding in connection with this mash:

Cracked corn	500 pounds
Barley	200 pounds
Wheat	200 pounds
Heavy oats	100 pounds

Like the Cornell mash, this mixture should be fed in hoppers and the chicks should be encouraged to eat about three parts of the grain mixture to every two parts of mash. Skimmilk or buttermilk is considered excellent and a supply of grit and green food is advisable.

The Missouri Ration.

At Missouri Poultry Experiment Station, the following dry mash is kept before the growing chicks at all times:

Wheat bran	2 parts
Shorts	1 part
Corn meal	1 part
Fine salt	1 pound to every 100 pounds of mash

When the chicks are on range, 10 pounds of good beef scraps can be added for every 100 pounds of the mash but if the chicks are confined in yards, from 15 to 20 pounds of beef scraps must be mixed with every 100 pounds of mash. The same mash may be mixed, crumbly, with milk or water and fed once a

day, what the chicks will eat up clean in a short time, if desired. Cracked corn and wheat, of equal parts, are fed in connection with the foregoing mash.

U. S. Government Ration.

The Poultry Division of the Animal Husbandry Department of the U. S. Department of Agriculture recommends the following mash mixture:

Wheat bran	1 part
Middlings or oat meal	2 parts
Corn meal	2 parts
Ground oats	1 part
Beef scraps	1 part

This mash is to be placed in hoppers and kept before the chicks at all times. Cracked corn, wheat and other grains are also fed in the Government's yards and a supply of grit, oyster shells and charcoal is always within reach. If the chicks are confined in yards, green food is supplied.

The New Jersey Ration.

At New Jersey Agricultural College they recommend feeding growing chicks heavily on sour skim-milk. The following is their mash mixture:

Bran	300 pounds
Middlings	100 pounds
Ground oats	100 pounds
Corn meal	100 pounds
Gluten feed	100 pounds
Meat scraps	100 pounds
Dried buttermilk	100 pounds

For scratch feed they recommend the following:

Cracked corn	100 pounds
Wheat	100 pounds

Note—It will be understood, of course, that all mixtures described in this book can be mixed in smaller quantities if the same proportions are maintained.



The profitable poultry plant on a well conducted farm.

Feeding For Eggs

Too Much Stimulation is not Advisable—Why Some Hens can not Lay—Formulas Showing Tried and Proved Mash Mixtures, both Dry and Wet, and the Grain Mixtures that should be Fed with Them

WHEN a heavy yield of eggs is the only requirement, the feeding plan is to furnish a ration which will force the hen to the highest production and not much attention is paid to conserving the vitality of the hen herself. By feeding certain rations, the reproductive organs are stimulated to greater than natural activity and, while this produces a big yield as long as the hen's vitality lasts, it often leaves the hen, at the end of a laying season, in poor physical condition. When it is intended to use the hen as a breeder the following season or when it is decided to prolong her activity as a layer over more than one season, the ration fed is not so stimulating. The grains, meat food, etc., are proportioned with the intention of maintaining the body of the fowl in good health and strength and enabling it to make the best use of that part of the food which is left, when the hen's bodily wants have been supplied, in the production of eggs.

The hen is regarded by scientific feeders, as a machine which, if given the raw materials to work with and kept in good condition, will produce eggs. In the case of a mechanical device which manufactures a certain product, it is known that if any one of the ingredients needed to make that product are omitted, the product cannot be completed and the machines' work, as well as the rest of the materials used, is lost. It is just the same with the hen. She requires certain amounts of each of the food elements which go to make a perfect egg. If anything is lacking to complete the yolk, the white, the membrane, or the shell, the complete egg cannot be laid

until enough of that absent element can be secured. For example, if the hen has plenty of material to make the yolks of a dozen eggs but only enough material to make the whites for nine eggs, she cannot lay a dozen complete eggs. She can lay nine, but the other three must wait until her system accumulates enough material for the whites. Likewise, though the hen may have sufficient material to make both yolks and whites but insufficient shell-making material she is compelled to hold back the eggs until sufficient shell-making material can be secured. In the meantime, much of the yolk and white material has been absorbed in the system and carried off as waste matter.

So that the hen can produce yolk, white and shell in the amounts required to make a perfect egg in the same period of time, rations are provided which contain the right quantities of yolk-making, white-making and shell-making materials. When the healthy hen is supplied these materials in the right proportions, the machine works perfectly and nothing is lost.

No mixture of dry grain or damp mash will alone produce the desired results. There must be meat food, green food, grit, shells, and charcoal to assist the grain in supplying the different elements that enter into the construction of the egg. Whatever mixtures of whole grains are advised, it is always understood that green food, meat food (in the form of beef scraps, fish scraps, milk, etc.) as well as the grit, charcoal and shells are to be provided in addition.

The Minnesota Method.

The Poultry Division at Minnesota Agricultural College recommends the following mashes, all of which are fed dry in hoppers:

Laying Mash A.

Corn meal	5 lbs.
Ground oats	5 lbs.
Wheat bran	5 lbs.
Wheat middlings	5 lbs.
Beef scraps	10 lbs.

Laying Mash B.

Corn meal	7 lbs.
Ground oats	5 lbs.
Wheat bran	3 lbs.
Wheat middlings	4 lbs.
Beef scraps	8 lbs.
Alfalfa	3 lbs.

Laying Mash C.

Fed when an unlimited supply of buttermilk or skimmilk is available.

Corn meal	5 lbs.
Ground oats	5 lbs.
Wheat bran	5 lbs.
Wheat middlings	5 lbs.
Alfalfa meal	5 lbs.
Beef scraps	5 lbs.

Either of the foregoing mash mixtures makes a complete ration when fed with either of the following grain rations and shells, grit, charcoal and green food.

Scratch Feed No. 1.

Cracked corn	25 lbs.
Oats	12½ lbs.
Barley	12½ lbs.

Scratch Feed No. 2.

Cracked corn	25 lbs.
Oats	12½ lbs.
Wheat	12½ lbs.

Scratch Feed No. 3.

Cracked corn	12½ lbs.
Oats	12½ lbs.
Barley	12½ lbs.
Wheat	12½ lbs.

Each of the grains in these rations should be fed in litter, separately or all mixed together.

The Wisconsin Method.

The following mash mixture is fed to the poultry at Wisconsin Agricultural College:

Wheat bran	100 pounds
Wheat middlings	100 pounds
Corn feed meal	100 pounds
Gluten feed	100 pounds
Meat scraps or tankage	100 pounds

This is fed dry in hoppers.

In some sections of the state, farmers are feeding cottage cheese and reducing the meat scrap to about 5 per cent or in some cases omitting it entirely. Also in some sections they are feeding fish waste in winter in place of meat scraps. The scratch mixture is made up as follows:

Cracked corn	500 pounds
Wheat	100 pounds
Oats or barley	100 pounds

This is fed as a light feed in the morning and as a heavier feed in litter toward night. The Wisconsin authorities emphasize the importance of feeding some kind of animal food, a good supply of green stuff and an abundant supply of lime-rock grit and crushed oyster shells. They have found that lack of lime is a limiting factor in egg production, the same as the lack of any other essential.

The Purdue Method.

The standard laying ration recommended by Purdue University is made up of a mash consisting of:

Wheat bran	5 pounds
Shorts	5 pounds
Beef scraps	3½ pounds

And a grain mixture consisting of:

Corn	10 pounds
Wheat	10 pounds
Oats	5 pounds

Grit, oyster shells, ground, dry bone and water are available at all times and green food is furnished.



Scene on a California egg farm.



Feeding time on a New Jersey egg farm.

When wheat is high in price, the grain is changed to 18 pounds corn and 7 pounds oats. When barley is available it is substituted for half the wheat. When tankage or skimmilk is available, substitute 3 pounds of tankage or 50 pounds of milk for the beef scraps in the mash.

The Cornell Method.

The Department of Poultry Husbandry of Cornell University, New York, recommends the following mash mixture:

Wheat bran	100 pounds
Wheat middlings	100 pounds
Corn meal	100 pounds
Ground oats or barley	100 pounds
Meat scraps	100 pounds
Salt	3 pounds

And for scratch feed the following grain mixture:

Cracked corn	500 pounds
Barley	200 pounds
Wheat	200 pounds
Heavy oats	100 pounds

The Missouri Method.

The Extension Service of Missouri College of Agriculture finds that the following ration satisfies the needs of winter egg production—the mash is made up as follows:

Wheat bran	3 pounds
Wheat shorts	3 pounds
Meat scraps	1½ pounds

The scratch grain is made up of:

Shelled corn	10 pounds
Dry threshed oats	5 pounds

The above two mixtures are fed, dry, to 100 hens each day. When skimmilk or buttermilk is plentiful, three gallons should be given each 100 hens daily and that will take the place of the beef scrap.

The Washington Method.

At the Western Washington Experiment Sta-

tion, the following ingredients are used in the dry mash:

Wheat bran	180 pounds
Low grade or red dog flour	90 pounds
Corn meal	100 pounds
Fish meal or meat meal	50 pounds
Flaked charcoal	12½ pounds
Alfalfa leaves and blossoms	12½ pounds
Clean sharp sand	one 16-quart bucket

This is fed dry in winter and the same ration is used in summer, except the corn meal is reduced to 50 pounds and 25 pounds of linseed oil meal is added. Sprouted oats, elabbered milk or buttermilk and mixed grains are fed in addition.

Uncle Sam's Method.

The U. S. Government poultry experts recommend the following rations:

For Small Breeds, Like Leghorns.

Mash.		Scratch Feed.	
Corn meal	16 parts	Cracked corn	3 parts
Meat scraps	6¼ parts	Oats	2 parts
Bran	1 part	Wheat	1 part
Middlings	1 part		

For heavy breeds like Plymouth Rocks, Wyandottes, etc.

Mash.		Scratch Feed.	
Bran	1 part	Cracked corn	2 parts
Middlings	1 part	Oats	1 part
Corn meal	3 parts	Wheat	1 part
Meat scraps	1½ parts		
Ground oats	2 parts		

All parts are by weight. A variety of green food as well as grit, charcoal, shells, etc., all are recommended with these rations.

International Laying Contest Method.

This is the ration fed in the Connecticut (Inter-

national) Laying Contest, where high records were made. The dry mash follows:

Coarse wheat bran	200 pounds
Corn meal	100 pounds
Gluten feed	100 pounds
Ground oats	100 pounds
Standard middlings	75 pounds
Fish scraps	45 pounds
Beef scraps	45 pounds
Low grade flour	25 pounds

The scratch feed was made up as follows:

Cracked corn	60 pounds
Wheat	60 pounds
Heavy white oats	40 pounds
Barley	20 pounds
Kafir corn	10 pounds
Buckwheat	10 pounds

The Nebraska Laying Contest Method.

In the Nebraska Laying Contest, held at the Nebraska State Experiment Station, the mash was made up as follows:

Corn meal	100 pounds
Bran	100 pounds
Shorts	100 pounds
Finely ground oats	100 pounds
Meat scraps	100 pounds

The scratch feed consisted of the following:

Cracked corn	200 pounds
Wheat	100 pounds
Heavy oats	100 pounds

Sprouted oats was given for green food, as much as the fowls would eat in about 15 minutes at noon each day. Occasionally the mash was moistened with skim milk or buttermilk, but usually it was fed dry.

The National Laying Contest Method.

In the National Laying Contest, held at Missouri

Poultry Experiment Station, the following ration was furnished: The mash:

Wheat bran	25 pounds
Shorts	25 pounds
Corn meal	30 pounds
Ground oats	10 pounds
Beef scraps	12 pounds
Fine salt	1½ pounds

The grain mixture was very simple, as follows:

Cracked corn	50 pounds
Wheat	50 pounds

The mash was moistened and fed every morning throughout the year and the principal grain feed was in the evening.

The Dakota Method.

In the North Dakota Laying Contest, the following dry mash was used:

Wheat bran	16 pounds
Shorts	16 pounds
Corn meal	16 pounds
Beef scraps	12 pounds

The following was the grain ration fed:

Cracked corn	30 pounds
Wheat	15 pounds
Oats	15 pounds

During November and December the beef scraps were increased to 16 pounds.

The New Jersey Method.

At New Jersey Agricultural College they feed laying hens the following dry mash:

Wheat bran	100 pounds
Wheat middlings	100 pounds
Ground oats	100 pounds
Corn meal	100 pounds
Meat scrap	100 pounds

The layers are fed the following scratch mixture, except that on the coldest days the cracked corn is increased to 200 pounds.

Cracked corn	100 pounds
Wheat	100 pounds
Good plump feeding oats	100 pounds



Well shaded runs on a mid-western poultry farm.



Colony houses on a Massachusetts farm where soft roasters are the principal product.

Feeding To Fatten

How Chicks, Both Broilers and Roasters, and Fowls are Fed to Put on the Most Flesh and Fat in the Shortest Time—Free Range, Pen and Coop Fattening—How to Make the Best Fattening Combinations

FATTENING depends for its success on two important factors which are not directly connected with the ration. The chick or fowl to be fattened must be strong, healthy and vigorous so that it can digest a large amount of feed and change that food into flesh and fat. It is equally important that during the fattening period the fowl or chick be contented and comfortable, which requires absolute freedom from vermin.

There are several methods of fattening, which include free range fattening, fattening in pens and fattening in coops. When the first method is used, the stock is allowed the freedom of the farm and is fed a fattening ration which usually is very rich in beef scraps and corn and corn meal. The bird which has its liberty, can and will eat heartily of richer foods than one which is confined. On the other hand, it loses a certain amount of its fat by vigorous exercise and this generally is made up by increasing the length of the fattening period. It often happens that chicks (broilers and roasters) make better market stock when fattened on the range because that method requires less care and the average poultry keeper is unable, or is not inclined, as the case may be, to tie down as closely to details as is necessary when the fattening is done in the pens of a house where the bird has a little exercise or when done in a fattening coop, where the bird has no exercise at all.

Fowls, however, usually fatten better in confinement than when on free range because their dispositions render them more likely to be content in the closer quarters.

Pen fattening consists of giving a certain number of birds a fair sized pen in a poultry house, sometimes in connection with a small yard outside, where they can exercise in the open air if the weather permits. In such quarters, the ration usually contains more milk, barley and oats and less corn and beef scraps (though both are used extensively) than when operating under the free range system.

When fattening coops are used, a few birds are crowded closely together in coops of a special design. These coops are usually placed in buildings where the fowls will be comfortable in the winter and where ample ventilation protects them against extreme heat in summer. When using this system, buttermilk is often used extensively and the mashies, instead of being crumbly, are mixed quite wet so that they may be eaten rapidly, which usually is followed by the fowl or chick filling its crop even though it is not very hungry. In both the pen and the coop methods, feeding must stop and the bird be sent to market just as soon as it gets "off its feed" which means as soon as it stops eating heartily and that usually happens in from ten days to three weeks.

Whatever method is used, no more feed should be given at each feeding (and they usually are fed three times per day) than the fattening specimens will eat up promptly and all remaining food, if any, should be removed at once and the feeding troughs either removed or cleaned.

Cornell Fattening Ration.

The Poultry Department of Cornell University recommends two rations for fattening, one with milk



A city lot poultry house and yards where poultry pays a fine profit.

and the other with meat scraps, and both fed wet. The following is the ration with milk:

Corn meal	50 pounds
White wheat middlings	20 pounds
Ground heavy oats	10 pounds

This is to be mixed to a batter, fresh at each feeding, with buttermilk or skimmilk. It will require approximately two pounds of milk to one pound of mash. Following is the ration with meat scrap:

Corn meal	50 pounds
White wheat middlings	20 pounds
Ground heavy oats	10 pounds
Meat scrap	20 pounds

This is mixed to a batter, fresh at each feeding, with water. It will require approximately 3 pounds of water to 2 pounds of mash. These rations are recommended for both young and old stock and are used largely for fattening in crates or pens.

Purdue Fattening Ration.

At Purdue University, Indiana, the following fattening ration is used:

Corn meal	2 pounds
Ground oats	1 pound
Shorts	1 pound
Buttermilk	8 pounds

This is also mixed to a batter and may be fed to old or young stock.

Montana Fattening Ration.

At Montana Agricultural College, the following mixture is used for fattening the young birds.

Shorts	2 pounds
Corn meal	2 pounds
Barley	1 pound
Meat scrap	1 pound

This is mixed with sour milk or with buttermilk and has given good satisfaction when fed to surplus cockerels which are fattened for market.



A group of pullets.



A breeding house with partly open front; the openings are covered with cloth curtains in bad weather.

Feeding Breeding Fowls

**Information on How to Keep Breeding Stock in Condition so that They will Lay Eggs that not only are Fertile but that will Hatch Strong, Healthy Chicks—
How Feeding These Birds Differs from Feeding the Layers**

THERE are several points at which the practice of feeding birds that are to be used, or are actually in use, as breeders differs from that of feeding for high egg production. With breeding stock, the problem is not to get the most eggs but to get a fair yield of eggs which are so constituted that they will produce strong, healthy chicks. Health and vigor are the first considerations and the ration must be so made up that it conserves and builds up both these important factors to the highest possible degree. The hen that lays exceptionally well usually takes some of the strength and vigor from her own body and in such case she puts so much strength into producing her eggs that it takes the vigor from her own body. Such a hen seldom lays eggs which have the elements which make the most perfect chick when the same eggs are incubated, even under the most favorable conditions. That is why high record layers are seldom bred from during the year in which they make their records, and why they are kept over until the season following before their eggs are used for hatching and why, in addition, they are "rested," as breeders call it, which means that they are not fed for egg production during the year in which their services as breeders are desired. In any event, whether the hen in the breeding pen was a high-record layer the previous year or not, if she is to produce eggs for hatching, she must not be allowed to reduce her strength by heavy egg production because the first essential is to build up her bodily strength by feeding a variety of healthful feeds. The number of eggs she lays is far less important than the quality, from the hatching viewpoint.

If it happens that a hen is to be bred from which has laid exceptionally well during the preceding year, the problem is to so feed her that she will not be induced to lay to the limit of her capacity, or near it, but so that her body will be strengthened and invigorated. A variety of ground, cracked and whole grains must be fed, including corn, wheat and oats, with barley to give variety if it is readily obtainable. The barley may take the place of wheat, if necessary, though we prefer wheat if both cannot be obtained. The ground grains may be fed in a dry mash or may be mixed with milk or water and fed crumbly once a day. If water is used for mixing (or if the mash is fed dry) it is best to add from five to ten per cent, by bulk, of high grade beef scraps. Many breeders favor the dry mash instead of the damp mash because they think that the damp mixture is more inclined to force egg production.

In the early spring, when the breeders do not get out on the ground and at all times when they cannot have free range, the cracked and whole grains should be fed in clean, deep litter so that the hens will obtain exercise scratching it out. Exercise is a prime factor in maintaining health and producing vigor and it should always be taken in a good, clean atmosphere, with the windows open and the fresh air pouring in.

Far less meat food, whether in the form of milk or beef scraps or fish scraps, should be fed to the breeders than to the layers. Some animal protein, however, is necessary and there is no better form in which it can be fed than those we have just mentioned—milk, beef and fish.

Feeding Exhibition Stock

How Feeds and Methods of Feeding Affect the Condition of the Show Bird—Feeds that are Used by Expert Conditioners to Improve the Appearance and Quality of the Show Room Specimen

HEALTH is the first essential. Without health, the perfection of shape, beauty of color and exactness of marking is well nigh impossible to produce. We are glad to quote on this subject from an article which appeared in Poultry Herald (and was copyrighted by that paper) and which was written by Arthur C. Smith, one of the most skillful and successful exhibitors that this country ever produced. Following is Mr. Smith's advice on this important matter:

"Take the case of a fairly mature male bird. He should have a pen to himself. The larger the better, but one eight by nine will answer for most birds. The floor should be dry, clean sand, covered with a litter of dry straw. The straw need not be cut, as the bird, if he is properly trained, will break it up in a short while. This litter should be from two to four inches deep, varying with the size of the bird. The larger the bird the deeper the litter. In the morning throw in a small handful of scratch feed, scattering it well. In an hour or so, give him some warm mash but do not allow him to stuff with it. A heaping teaspoonful or two is about the right quantity but unless he eats this eagerly and rapidly, it is too much. An hour or two later throw him more scratch feed and put him to work again. If the bird is immature and you wish to force him a little, feed him another mash at noon. An hour later a few kernels of small grain will keep him busy, while at night he should have a good, square meal of good grain.

"Green food, he should have a little of and but a

little. Grit and oyster shells, he should have in abundance at all times.

A Good Mash Makes Flesh.

"A mash helps the bird to flesh up, but much of it is too heavy in his crop and makes the bird logy and he refuses to exercise; consequently he will not eat as much nor can his system assimilate as much. This mash may be made in several ways. Corn meal and bran may be mixed with a very small quantity of white flour middlings in such a proportion that the mash is a substantial but not a sticky mass. It should be mixed with boiling water, merely hot water does not do. It must cook to get the desired effect. To that end it should be packed closely together and covered for a time. After standing for half an hour, uncover and stir. Allow it to cool until it is warm but not hot; then you have the food for a meal that the fowl will relish. Other ingredients make good mashes and I like the mixture of ground oats and corn meal commonly called provender.

"For scratch feed, any of the small grains will do. Oats are good, so is wheat if you are not using it for a night feed. But above all I prefer the prepared scratch feeds, if they are made of good grain, for two reasons; first the variety and second for the fact that the grains are cracked into small pieces which make the fowls do the maximum amount of work for the minimum amount of food.

"For the final feed at night, nothing compares with white wheat of the best quality. This is the



A flock of thrifty Standard-bred pullets.

main food but may be alternated with barley with good results. For fowls that are inclined to get too fat, barley is preferable to wheat.

Immature Birds May Be Forced.

"Birds that are very immature and that it seems advisable to force along as fast as possible may take quite a different ration from those that are grown or have time to grow. An excellent mash may be made as follows: Put hamburger steak to boil in cold water, allow it to boil until the amount of water is small and then thicken with corn meal and a little bran. This may be fed once a day, but not in such quantities that the bird is forced off its feet. This bird should be kept scratching as the others but he may, if hearty, be fed more heavy grains. A good variety will force a bird along faster than a limited diet.

"A very appetizing meal is made of broken crackers and corn meal and bran. The birds like this, especially if the crackers are the sweet kind and if not, they can be sweetened with sugar or molasses. The value of this food as a weight producer may be further enhanced by mixing with scalded milk. It should not be forgotten that these birds must be growing feathers and that it is sometimes necessary to aid them in this. Nothing that I know of is any better for aiding feather development than dessicated fish. A little may be added to one of the mashes each day.

The Best Forcing Menu.

"To make myself plain, the best forcing feed consists of the broken scratch feeds, the sweet cracker mash and the beef and meal mash with wheat or mixed grains for the hearty meal at night. In very cold weather a few kernels of corn might be thrown the birds, the last thing before they go to roost. A very little buckwheat may be added to the grain mixture.

"With reference to feeding, two classes of birds

might be considered, as each class must be fed in a different manner. They may be divided into white birds and others. The methods of feeding each differ but the methods that have already been described are tolerably well suited to either class. These methods can be modified somewhat and are then better adapted to each of the special classes.

Feeding White Birds.

"By white birds, I refer to those that have white in their plumage, not necessarily only the solid white varieties. Barred Plymouth Rocks and Silver Spangled Hamburgs, for instance, should be fed precisely as pure white birds are.

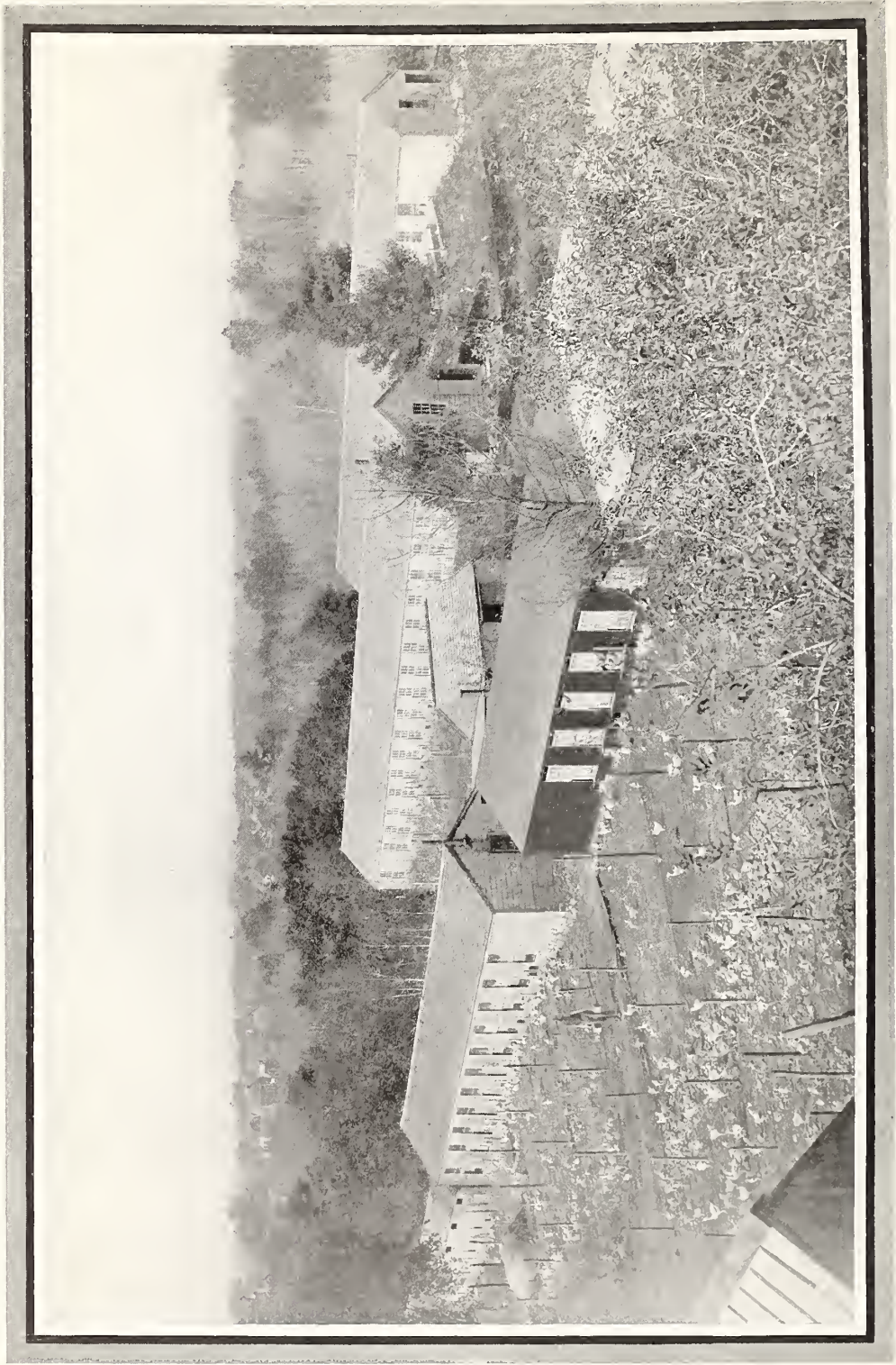
"It is a generally recognized principle that the pearl white color cannot be obtained in its clearness and purity when allowing these white birds oily foods. Therefore yellow corn, scraps, meat fats are excluded from their diet. Those who wish to feed meat and are still very cautious, may boil fresh beef, allow the liquid to stand and cool, when the fat may be skimmed off. The meat and broth may be stirred into the mash. Try this with your cut green bone and you will find an amount of fat that will surprise you.

Food That Develops Gloss.

"For the class which requires a gloss, the fats and oils are a great help if not an absolute necessity in getting good condition. The best foods for gloss are corn, buckwheat, sunflower seed, beef scraps and suet or beef tallow. These cannot be used in quantity or as staple foods, as they 'age' the plumage if given to excess. Many exhibitors are so situated that they cannot attend their fowls during the day. I believe that the best method they can pursue is to feed the mash late in the afternoon and in the morning, give the birds grain to scratch for during the day. A cabbage may be hung so high that they will jump a little to reach it."



Some prize winning Light Brahmas.





Sheds that can be used for growing chicks or fowls in warm weather and for turkeys in cold weather. When used for turkeys, curtains are provided to be dropped down and cover the front in extremely cold and stormy weather.

Profitable Feeding of Turkeys

Turkeys Still Cling to their Wild Method of Living and must be Catered to Accordingly—How Successful Growers Feed Little Poults, Growing Turkeys, Exhibition Turkeys—How to Fatten Them for Market

TURKEYS have never been as thoroughly domesticated as chickens, ducks and geese. They still cling to many of the traits which they had when they roamed the forests when America was discovered. They are still wild by nature and will not stand confinement, neither will they do well when fed by the methods that are successful with other kinds of poultry. For example, they do not do well when fed on mash foods but require, for the best results, cracked and whole grains and enjoy and profit by, in addition, the tender vegetable growths and the bugs and worms which they obtain in the fields and woods when the weather permits. They cannot be induced to lay a large number of eggs by feeding heavily on egg producing feeds but will either refuse to eat such rations in any quantity or, if they do eat much of such rations, lose their health. However, as there is no market for turkey eggs except for hatching, this is no hindrance to success in the turkey business.

FEEDING LITTLE POULTS.

THERE are many ways of feeding little poults, as the young of turkeys are called, some including various condiments, but the better way is to feed easily digested dry feeds and keep spices, pepper, etc., entirely absent from the ration. Thick, clabbered milk, prepared after the manner of what is known to the housewife as cottage cheese, is often advisable for the first feeding. Some claim that the addition of black pepper is advisable. When one considers, however, the effect of black pepper on the human system, it is plain that the less of this condiment in the feed for little poults, the better for the poults. The cottage cheese alone is excellent, but we

have found the following mixture, when mixed with milk and baked hard in a cake, very satisfactory:

Corn meal	two parts
Wheat bran	one part
Sifted beef scraps	five per cent

When this is mixed with sour milk a little soda should be added. This is the same cake that is recommended for feeding little chicks and may be fed to the little poults four times a day at the start, in a crumbled condition. This must not be fed unless it is hard and dry so that when crumbled it breaks apart easily and the small pieces do not stick together.

Any of the dry grain chick feeds made up of small and cracked grains, are excellent for feeding little poults if they are sweet and clean. They must be entirely free from even a suspicion of mustiness or mould. Fine grit and fine charcoal should also be provided as aids to digestion.

For drink, water must always be accessible and milk, which is excellent, must be given in addition to, and not in place of, water.

The hatching is usually done in nature's hatching season, which is after the fresh grass starts and the turkey hen or the ordinary domestic hen, which mothers the brood can usually obtain sufficient green food for the youngsters. If, however, the brood is confined in coops or yards more than four or five days at the start, some tender green food should be supplied, the more tender the better. After the first few days it is necessary to give the youngsters more range if they are to do well but if they must for any special reason be confined, plenty of green food must be given them and it must be fresh and tender.



A laying house on a prairie farm.

FEEDING GROWING TURKEYS.

THE fact that turkeys still retain many of their wild instincts is one of the things that makes turkey raising profitable. The growing turkey, if left to itself and given wide range on a farm where the land includes lowlands, highlands and, if possible, a woodland and a brook, will gather a great deal of its own food by foraging. It is surprising how much and how many different kinds of nourishment a flock of vigorous youngsters will find during the day. Bugs, worms, tender roots, fresh green grass, seeds, berries, etc., all go to make up a complete ration and the kind of ration that nature intended them to have for their proper growth and development. It is this ability which turkeys possess, to a far greater degree than other poultry, to forage for a living that cuts down the cost of feeding growing turkeys to a low point.

It will not do, however, to depend on the turkeys to get all their food from the range, though sometimes they do it, and it always pays best to feed them at least two good rations a day, morning and night, until they are at least half grown and then give them as much as they will eat up when they come in from the range at evening, one feed per day only.

On account of the fact that they obtain so many bugs and worms, it is not necessary to feed them any animal food and as they also pick up their own green food and their own grit, neither of these items, which count so strongly when feeding chicks, need be furnished to the poults. Usually, too, they drink at a nearby brook or

from the escape pipe where water leaves the horse and cattle troughs and as they usually roost in the trees and on the sheds, the only item in caring for the youngsters is to see that they have sufficient grain each day. Cracked corn (or whole corn when they get older) wheat and oats, are the best feeds and, in view of the varied character of the foods they get on the range either one, any two or all three of these grains will usually produce excellent results. It is best, however, to provide some corn, which, when combined with the natural food obtained, makes the best single grain for summer and fall feeding.

It is best to feed each grain separately, one one day and another the next, because if a mixture is fed the youngsters sometimes pick out the kind they prefer and, having eaten enough to satisfy their appetites, allow the rest to remain on the ground.

Poults should never be fed with chickens and should not be allowed to eat with the chickens. Unless they are kept entirely away from the chick quarters, they are liable to eat too much of the prepared food, which not only is likely to harm them but adds to the expense of feeding, prevents them from seeking diligently for nature's food and in that way cuts down the profit.

FEEDING BREEDING TURKEYS.

On account of their tendency to roam and thereby obtain plenty of exercise, turkeys are very easy to keep in good condition for breeding. They must be allowed to follow their inclination to range and if they are confined in houses or ordinary yards, they usually become listless,



Two stylish Bronze turkey toms.

droop and, in some cases, pine away. In winter, when grit is not available, it is a good plan to put a box of coarse, sharp grit where the turkeys can readily reach it and to add a box of charcoal. If water cannot be reached easily by the flock, a plentiful supply must be given at least twice a day.

The turkeys do not need mash food during the winter and do not need meat food of any kind. A ration, fed twice a day, of the principal grains, including corn, wheat, oats and barley, or any two of these grains, fed separately, is usually satisfactory. In case they seem to be getting thin in flesh, more corn should be fed and if they are getting fat, less should be given. Corn, therefore, is used to keep the balance of flesh about right, if it is used at all.

A turkey that gets overfat in winter is seldom good as a breeder in the spring, even if the flesh is reduced to a point which would be considered normal and in addition there is the trouble of reducing the flesh. Some turkey breeders feed no corn at all in winter but depend mostly on oats and wheat so as to be protected against the possibility of the turkey

coop and its plumage is seldom as smooth, glossy and brilliant. Turkeys shown during the fall, when they are taken off free range, are usually in excellent condition but those intended for the winter shows must be fed a little more corn than the stock which is being held exclusively for breeding, if the best show specimen is to be well developed. Those that eat with the turkeys that are being fattened for Thanksgiving, Christmas and New Years often make the best show specimens.

Briefly, the only feeding required for the show turkey is the ordinary ration for breeders with enough corn added to put on additional flesh. It should be remembered, of course, that an over-fat specimen is not to be desired for any purpose except for market.

FATTENING TURKEYS.

TURKEYS are seldom well if confined in any manner, even in yards of considerable size. Occasionally, you will find an especially quiet flock that will do well in a large yard, that will eat



Feeding the farm flock, in which Bronze turkeys predominate.

getting too fat. It is true, however, that a turkey does not winter well if it is kept too thin in flesh because, in such cases, the cold of the winter (in northern climates) saps too much of the vitality because the system is not sufficiently prepared to protect itself. For that reason, our experience has indicated that it is advisable to feed enough corn to keep the birds in medium flesh, if corn is necessary to accomplish that purpose.

FEEDING EXHIBITION TURKEYS.

TO SHOW at its best, a turkey must be slightly fat. A turkey which is not slightly fat is seldom as full and as round in the different sections as it should be to make the best appearance in the show

sufficient food to fatten thoroughly. In most cases, however, those that are fenced in will spend most of their time patrolling near the fence, diligently seeking a place to escape. Under such conditions it is impossible to add flesh and fat and the cost of feeding is thrown away while the turkeys usually lose instead of gain.

The problem, therefore, is to feed those intended for market sufficient fattening food without also feeding those which are not intended for market on the same ration, while allowing both the free range required for the best results. Some turkey raisers feed the entire flock on fattening food in the fall, then market all that are to be marketed that year on the Thanksgiving market and gradually change the ra-

tion to one that is less fattening, then to one that is not fattening at all as soon as the market stock is sold, usually about the 20th of November. This is undoubtedly the easiest way and the only danger is that it may over-fatten some of the old turkeys and injure their future usefulness. Some of the old toms and old hens are, in some cases, confined during the fattening period, which need last only two weeks, or at the most three weeks. Another method is to confine all of those which are to be kept for breeding,

during the short period in which those intended for market are fattened.

To fatten, simply feed all they will eat of cracked or whole corn, or both. The mash feeds used for fattening other poultry will almost invariably cause digestive troubles or result in loss of flesh rather than a gain. Plenty of water is necessary and a supply of grit for a thorough grinding of food in the turkey's gizzard and charcoal to keep the digestive organs purified are effective aids to the best results.

Always Follow Nature's System

WE STATED earlier in these articles that turkeys, young and old, must be handled quite differently from any other kind of poultry. As we also explained previously, the cause of this is the fact that turkeys have never become entirely domestic in their habits but have retained many of their wild traits. No one has ever raised turkeys successfully in confinement. Experiments have been conducted, where the breeding stock for two or three generations was kept in yards of generous size and the young raised without free range, and while everything was done to make all conditions healthful and to provide rations that seemed to be best adapted to each condition, the health of the flock gradually run down until it reached that point of weakness where it was impossible to secure good hatches or raise even a small percent of the young to profitable maturity.

If we stop to consider, we will remember that in their wild state turkeys were found mostly in mountainous regions, where they lived under the most healthful of natural conditions and subsisted on natural vegetable and animal food, including grass, tender roots, buds and other green vegetable growths, obtaining the animal part of their ration from the bugs, worms and insects which they captured. Sometimes little animals, like mice and moles, added variety to this part of the ration and berries and fruits, as well as the seeds of wild grains, to the vegetable part. Their life in the open air, and the strenuous exercise they were obliged to take in order to secure their food, built up systems that could digest almost anything that they found to eat.

It is impossible to reproduce these conditions and this method of feeding in present-day turkey keeping but usually the nearer we come to it, the greater success we have and the more profit we find in turkey culture. Range must be supplied and that confines the turkey industry to farms and excludes it entirely from cities and villages. With free range on farms, a fairly near approach to Nature's method may be put into practice, though of course, in the northern latitudes, where winters are cold, protection must be given the flock in mid-winter. This is best provided by large, open sheds with wire fronts to keep out animals and burlap curtains to let down over the wire to shut out cold winds and storms.

One of the most successful turkey raising establishments is situated on an island, where there are no wild animals and where the turkeys, young and old, can run at liberty with no danger from animals during a large part of the year. There, where the principal author of this book was manager for several years, the practice is to allow the hen turkeys to make their nests wherever they like and to hatch and rear their young under practically perfect natural conditions. An effort is made to feed the little poults until they get a good start and as soon as the natural food begins to fail in the fall and the turkeys congregate around the farm barns, plenty of good grain is given. On this island the supply of natural food is unusually good. Bay berries flourish there and are available in summer and fall and are much relished by the turkeys in early spring when they pick the dried fruit, which still clings to the bushes.



White Holland turkeys.



Pekin ducks enjoying the first swim of the season.

Successful Duck Feeding

Feeding Usually Determines the Profit—Rations for Little Ducklings, Growing Ducklings, Breeding Ducks, Stock Ducks—How to Put on Flesh and Fat Before Killing

WHILE the duck in its wild state did not have any of the present day damp mashes in its diet, experience has shown that better results can be obtained when damp mashes are employed, particularly when rapid growth and quick fattening is desired. Ducks are known as "trough feeders," that is, they are given practically all of the feed in troughs, no matter whether it is damp mashes or hard grains. Like other kinds of poultry, they require grit for grinding the food but will seldom eat enough of it if the grit is given separately in boxes or hoppers, as it is in the case of other fowls. The grit is, therefore, usually mixed in the mash food and as the same facts apply in the case of charcoal, the charcoal is also mixed in the mash. As a considerable part of the ration is made up of these mashes, it is easy to furnish sufficient grit and sufficient charcoal.

Ducks are heavy drinkers and they positively must have it with their meals. The duck, whether young or old, does not stop to chew his food and in ordinary circumstances will fill his bill so full of food that he cannot readily swallow it in the condition in which he received it and he, therefore, rushes to the water trough for the means of washing it down. In his natural environment, the duck secured considerable food from swamps, brooks and ponds and under such conditions he naturally took plenty of water with each mouthful and every piece of food consumed. Ducks have been known to choke themselves if they do not have water available at meal times. It is also essential to have the water deep enough so that each duck can get his head into it up to his eyes. This seems to be required to keep the nostrils open and the corners of the eyes free from accumulations of feed, though if the ducks have a swimming pool or

pond, they will take care of their eyes when swimming.

The water should always be given in long troughs where nearly all the flock can drink at one time and, if possible, should be on the outside of a fence made of vertical slats through which the ducks will reach their heads and drink, or located with these vertical slats on each side through which the ducks reach the water. Unless so protected, the water is spilled in such quantities as to dampen the pen and a damp pen causes trouble. Some breeders provide special drainage under and around these troughs to take away the water which the ducks spill.

FEEDING LITTLE DUCKLINGS.

CONSIDERABLE care should be given to the feeding of the little ducklings for the first few days but after they get a good start they will grow very rapidly and very few will be lost. It all depends on whether or not they make a good start in life. A good start depends considerably on the proper rations. They should have no feed at all until they have been out of the shell at least twenty-four hours, though they should not be out of the shell more than thirty-six hours before they have the first feed for after that time they begin to lose strength unless they receive some nourishment.

For the first few meals there is nothing better than stale (but not mouldy) bread, wet with milk and with a little fine grit, not more than three per cent (of the whole) and about the same amount of finely granulated charcoal, mixed in. This bread and milk is very easily digested and the grit aids digestion while the charcoal absorbs any poisonous gases or juices in the digestive organs. This should be fed in shallow pans or on thin narrow boards or in little



A brooder house for starting the little ducklings. When they are from two to four weeks old they are moved to the larger building shown on the opposite page.

troughs, five times a day, the first feed reasonably early in the morning and the last just before dark. No more should be given at each feeding time than will be eaten up promptly, say in five minutes, and any that remains should be taken away with the troughs and the troughs cleaned.

To keep the ducklings from getting into the water, of which a supply is absolutely necessary, the drinking space must be so narrow that the ducks cannot get their feet into it or get in and stand but wide enough so that they can get their heads into it. The drinking fountain or trough must be large enough so that a majority of the flock can drink at one time and so that none will have to wait for their turn. A flock of little fellows may easily be taught to drink by dipping the bills of two or three of the strongest in the water a few times. Then the entire flock, which can be depended on to imitate the leaders, will take to the practice promptly.

Another good feed is the cake we have advised previously in this book for chicks and poults, except that this must be moistened, like the bread, and have grit and charcoal added.

After the first few days, the following mixture may be gradually substituted:

Stale bread	two parts
Corn meal	one part
Wheat bran	one part

This should be mixed with milk or water, preferably milk, until it contains as much of the liquid as it will hold. Like the earlier feed there should be a little charcoal and a little grit. After the ducklings are ten days old, the following can be gradually substituted for the preceding mixture:

Corn meal	one part
Ground oats (with the hulls sifted out)	one part
Wheat bran	one part
Beef scraps (of the whole)	five per cent
Fine grit (of the whole)	three per cent
Charcoal (of the whole)	three per cent

This is to be mixed, crumbly, with milk or buttermilk or water and if milk or buttermilk is used, the beef scraps may be omitted.

FEEDING GROWING DUCKLINGS.

DUCKLINGS grow very rapidly when properly fed. Their ration must be bulky, it must contain plenty of nourishment so that the rapidly growing youngsters can build bone, flesh and feath-

ers in the right proportions to make a well developed duck. However, there is nothing complicated about feeding ducklings and the main thing is to give them enough of a reasonable variety. At least two thirds of the ration must be damp mashes to obtain the best results, which means two damp mashes, at least, and one feed of whole or cracked grain, at the most, per day.

A good mash for growing ducklings from the time they are three weeks old until they are ready to be fattened for market (which fattening begins when they are seven or eight weeks old) is the following mixture:

Corn meal	one part
Ground oats	one part
Wheat bran	one part
Steamed alfalfa	one part
Beef scraps (of the whole)	five per cent
Grit (of the whole)	three per cent
Charcoal (of the whole)	three per cent

Another and more simple mash and one which has given good satisfaction is:

Corn meal	one part
Wheat bran	two parts
Beef scraps (of the whole)	five per cent
Grit (of the whole)	three per cent
Charcoal (of the whole)	three per cent

This mixture is improved by the addition of another part of corn meal or two parts of boiled vegetables. These mixtures should be mixed crumbly with milk or water and if milk or buttermilk is used, the beef scraps may be dispensed with, though usually the fastest growth is obtained by using both the milk and the scraps.

For the grain feeds, cracked corn, oats and wheat are usually most satisfactory and one is fed one day and another the next, rather than all three of them in a mixture. Growth can be materially increased by giving the ducklings milk or buttermilk to drink but the dishes or troughs in which this is given must be kept clean or they soon become poisonous and must be so protected that the ducklings cannot get more than their heads or bills into it to drink.

No matter what the ration is, the ducks that are confined in yards must have plenty of green food. Of course, if the youngsters are on free range, where green food can be obtained, they will get it by foraging, but this is never allowed in cases where they

are raised for market. One of the best green foods is short, tender clover, or fresh tender lawn clippings. A clover patch, which can be kept sprinkled and, therefore, can be kept growing, can be cut over and over again with the clover a few inches high and each morning's cut can be put through the cutting mill and cut into short lengths. At least one good feed of green stuff must be given per day. Other kinds will do, in fact anything that is fresh and succulent.

FATTENING DUCKLINGS.

PRACTICALLY all ducks are marketed while young, usually when they are from eight to ten weeks old, because at that time the market price is highest and the cost of production has been comparatively small. There is another reason why they are marketed at that age and that is so that they can be picked when there are no small pin feathers so that the carcasses will look cleaner and more attractive, and also when the cost of doing the labor is least.

Ducklings which have been well grown, and which are healthy and vigorous, will fatten in from ten days to two weeks at the longest if given good fattening rations. In fattening, mashes, constituting at least two thirds of each day's rations, are usually fed in the morning and at noon and a feed of corn or cracked corn is given just before nightfall.

The following is a good fattening feed:

Corn meal	three parts
Beef scraps	one part
Wheat bran	one part

Another excellent mixture is as follows:

Corn meal	two parts
Ground oats or ground barley	one part
Beef scraps	one part
Wheat bran	one part

Both of these rations should be mixed just stiff enough so that they are not sloppy. Better results

are often obtained if buttermilk is used for mixing and in that case, the amount of beef scraps can be reduced one half. It is a question (breeders do not agree very well) whether grit and charcoal are necessary in the fattening ration. Our opinion is that it at least does no harm to include both in one feed each day, especially if the fattening period covers more than one week. Whether or not green food is given depends on whether the market prefers a yellow skinned duckling or a white skinned duckling. If the yellow skin is preferred, green food should be given each day or every other day; if white skin is preferred, no green food should be fed. Usually the addition of green food produces a slightly heavier duckling. Care should be taken that fattening ducklings shall not be frightened, for they are very timid and the presence of a stranger or an animal, or a light at night, or any unusual thing, will throw them into a panic and they will lose more flesh in an hour that can be gained in two days under favorable conditions.

FEEDING STOCK DUCKS.

DUCKS are seldom kept for eggs (except in the cases where the Runner ducks are bred) and the ration given during the fall and winter should be such as will keep them in a good, healthy condition and in medium flesh. If eggs are wanted from the Runners they may be fed in the same manner as we have advised for growing ducks.

For fall and winter feeding, when two meals each day are sufficient, a morning mash is composed of:

Corn meal	one part
Wheat bran	one part
Boiled and mashed vegetables or steamed green, cured alfalfa	one part
Grit (of the whole)	three per cent
Charcoal (of the whole)	three per cent

A very simple ration that gives good satisfaction, particularly in the fall when the ducks can get



A brooder house in which ducklings are kept until ready for the fattening pens or selected for breeding and turned out on free range.

some green food on the range (and breeding ducks should be allowed to have range in the fall) is:

Corn meal	one part
Wheat bran	two parts
Grit (of the whole)	three per cent
Charcoal (of the whole)	three per cent

These mashes should be mixed with water, though milk may be used if available and cheap. At night cracked corn, wheat and oats should be fed alternately, one one evening, another the next, and so on. The main thing is to feed a ration that is bulky enough and nourishing enough and yet not too expensive because the ducks are not producing anything during the fall and winter.

FEEDING THE BREEDERS.

AS SPRING approaches and duck eggs are wanted for incubation, the ration must contain more egg-making material. On market duck plants, where early ducklings are wanted to catch the highest prices, the incubators are started in February or by March first, at the latest. About three weeks before the eggs are wanted, beef seraps amounting to about ten per cent (of the whole) are added to the stock duck rations and the ducks are encouraged to drink milk if the milk is available.

Sometimes if the mash contains considerable wheat bran and ten per cent of beef seraps is suddenly added, the digestive apparatus will give indications by a loosening of the bowels that less beef seraps or less bran, or both, should be fed. Therefore, it is usually best to start the beef seraps a little earlier and increase it from about five per cent to about ten per cent during the period of about three weeks.

The best results are usually obtained by feeding mash in the morning and evening of one day and mash in the morning and one of the grains in the evening of the next, then feeding mash both morning and evening of the third day, and so on. Some duck breeders, however, prefer to give the mash every morning and one of the grains every evening, feeding corn, wheat and oats, alternately.

Green food is absolutely necessary to secure strongly fertile eggs. In the early part of the season, second quality cabbage is often fed at noon or steamed green eured clover or alfalfa. After the grass is started, tender, fresh grass is cut in short lengths and given in place of the preserved green food.

Meat food, green food and a variety of grains, ground, cracked and whole will usually produce the desired results.



A flock of Toulouse geese.



A small breeding flock of Embden geese.

Best Methods of Feeding Geese

While Geese are Good Foragers, the Little Goslings and Growing Goslings Need Plenty of Supplied Food to Grow and Develop Properly and Breeding Geese Need One Good Meal a Day—The Simple Methods of Fattening

THE popular opinion seems to be that it costs nothing to feed geese and that during the spring, summer and fall they live on grass and during the winter on what they can pick up around the farm buildings. Sometimes they will do this but geese that have to depend on such sources of food never do well, never attain their highest value and usefulness and never are profitable. There is nothing complicated, however about feeding geese, young or old, and the simplest feeds are sufficient, because of the fact that geese are excellent foragers and will obtain food where no other members of the fowl kingdom can do so.

FEEDING THE GOSLINGS.

THOUSANDS of little goslings are lost every year because their owners believe that they should obtain their nourishment in the fields, which means that they should live largely on grass. The practice of this method results in starvation, though usually the owners of the goslings do not recognize it as that trouble. When the goslings are first hatched, or when they are from twenty-four to thirty-six hours old, they should be fed very much as ducklings are. Stale (but not mouldy) bread dampened with milk or water (preferably milk) and with a little fine grit and a little fine charcoal mixed in, makes an excellent mash. After the first day or two, the following mixture will be found satisfactory:

Wheat bran	three parts
Corn meal	two parts
Fine grit (of the whole)	three per cent
Fine charcoal (of the whole)	three per cent

This should be mixed with milk, if milk is obtainable, and in the absence of milk a little finely

sifted beef scraps, from three to five per cent of the whole volume, should be added.

Water should always be available in fountains or troughs where the goslings can get their heads into it up to their eyes, but cannot get into it to get wet. Milk to drink is excellent but will not take the place of water, which must be furnished also.

Goslings are seldom hatched until the grass starts and this gives them plenty of green food, which they will gather for themselves if allowed free range as they should be after they are three or four days old. If, for any reason, they must be confined in yards, plenty of green food must be furnished.

FEEDING GROWING GOSLINGS.

WHEN the young geese get fairly started, say when they are two or three weeks old, they will make good use of the farm range and will get a considerable portion of their food, and what they get will be exactly what they need, if the farm is of the usual kind, with some wet places and some dry places so that there is green food growing even in the dry season. It is useless to expect, however, that the goslings will grow and develop as they should if they are obliged to depend entirely on their own efforts. Those which are obliged to live on what they can find usually do not amount to very much, while those which have in addition at least one good feed a day, grow rapidly to large size and sell better in the market and for breeding, exhibition, etc. A little money spent for feed for goslings pays big dividends.

Until they get well grown, damp mashes are the

best food. The following is a simple one and produces good results:

Wheat bran	four parts
Corn meal	three parts
High grade beef scraps	one part

This should be mixed damp, but not wet, with water or milk, preferably milk. They will get enough grit on the range and the charecoal, which is given the younger ones, usually is not necessary for the older ones because of the large amount of green food they consume, which has a tendency to keep the digestive system in good condition.

When they are ten weeks old, they should begin to have a feed of cracked or whole corn occasionally and many breeders gradually shift to dry feed entirely when they reach this age, though some continue the foregoing mash mixed dry.

Water should always be provided unless it is within reach of the goslings in a nearby brook or pond or the escape stream from a water trough. Milk, of course, is still desirable if it can be had cheaply. Care should be taken that no buckets having water in them are within reach of the youngsters for it frequently happens that a gosling will fall into such a receptacle in an effort to get the water and falling in head first is unable to right himself and drowns.

FEEDING STOCK AND BREEDING GEESE.

FEEDING stock geese, both in and out of the breeding season, is a very simple matter. Most poultrymen feed largely, if not entirely on dry grains, whole or cracked. Corn, wheat, oats and barley are all used and are usually fed separately. Corn is probably the most popular feed in regions where

corn is extensively grown and is, therefore, easily available. With geese on free range in spring, summer and fall one feed per day of cracked or whole corn makes a very well balanced ration when taken in connection with the material found on the range. In winter, however, when but little green food is available, less corn should be fed, though it should be fed occasionally, if possible.

When the breeding season opens in the spring, green grass is again available and nature supplies what is needed to enable the goose to produce strong, fertile eggs that will hatch healthy, vigorous goslings.

No special feeding is necessary to fit geese for exhibition except that they must have enough so that they will be in good flesh, so as to present a well developed, well rounded appearance and so that their plumage will be smooth and lustrous.

FATTENING GEESE.

MOST geese are fattened and marketed in time to catch the Christmas and New Years demand. At that time they are just from the free range of the season and are healthy, vigorous and have almost unlimited capacity for eating and digesting food and turning it into flesh and fat. Usually all that is needed to produce a beautifully fleshed and fattened young goose is plenty of corn for two or three weeks before the time of marketing. It is not necessary to shut them up in yards unless it is more convenient to do so.

If desired, mash foods, composed largely of corn meal may be fed, unless the digestive apparatus shows signs of disturbance, in which case it should be immediately discontinued.



A flock of geese in pleasant, healthful, natural surroundings.



